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SUBJECT: Forwards response to request for addl info re 10CFR50.59
 evaluation - RHR flaw indications.

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L-94-207

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Unit 3
Docket No. 50-250
Request for Additional Information - Review of
Residual Heat Removal (RHR) Flaw Indications (TAC No. M84743)

By letter dated June 17, 1994, the NRC requested additional information to support the technical review of the above referenced 10 CFR 50.59 evaluation. The response to the NRC questions is enclosed.

Should there be any questions, please contact us.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Plant

Enclosure

TFP/RJT/rt

cc: S. D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

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TURKEY POINT UNIT 3

RESPONSE TO THE REQUEST FOR ADDITIONAL INFORMATION

10 CFR 50.59 EVALUATION -
RESIDUAL HEAT REMOVAL (RHR) FLAW INDICATIONS

RESPONSE TO NRC QUESTIONS

By letter dated June 17, 1994, the NRC requested additional information to support the technical review of Florida Power and Light Company's (FPL) 10 CFR 50.59 Evaluation of the Turkey Point Unit 3 Residual Heat Removal Check Valve Flaw. The response to the NRC questions is enclosed.

Question:

Confirm your intent to inspect and assess the crack in 60-month intervals, reporting non-conservative results to us.

Response:

As identified in FPL evaluation JPN-PTN-SEMS-90-041, Rev.5 (ref. 1), re-inspection of the subject flaw will be performed in accordance with an established 60 month plan with the next re-inspection scheduled after January 1996. This activity is being tracked within the Turkey Point Five-Year Maintenance Plan. Additionally, as stated in the reference 1 evaluation, FPL will evaluate all future flaw propagation inspection results to ensure consistency with the analysis bases. If flaw propagation rates are found to be non-conservative with respect to analysis results, empirically based propagation rates will be formulated or a more refined analysis performed (e.g., finite element analyses, etc.). The need for future valve replacement will be considered based on any such revised crack growth findings. Additionally, as requested in NRC letter dated June 17, 1994 (ref. 2), FPL will notify the NRC of any non-conservative crack growth rate inspection findings.

Question:

Determine the root cause of the initial flaw, if not already determined, and inform us of your conclusion.

Response:

Performance of a detailed metallurgical analysis of the indication would require destructive examination (and correspondingly render the valve un-usable). As such, only visual examination techniques have been employed in evaluating the flaw. However, within the limitations of the visual examination method, the location and orientation of the crack are indicative of a manufacturing induced defect.

In the process of overlaying hard face seats (such as the Stellite #6 employed in this valve design) on relatively thick base materials, shrinkage stresses may be induced during the cooling process. At the time of manufacturing, such stresses, although present, may not be manifested as initiated cracks. However, the cumulative effect of operationally induced thermal loading cycles and residual stresses from the manufacturing process may result in transverse crack initiation from the hard face material to the base material section.

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As appears to be the case with check valve 3-753A, initial formation of the crack may have largely relieved the stresses necessary to support continued propagation.

Based on the configuration and initially indicated lack of propagation, the root cause is identified as high residual stresses induced in the manufacturing process.

Question:

Inform us [NRC] of your assessment of the generic implications and inspection findings on other valves of similar design and application.

Response:

In response to INPO Significant Operating Experience Report (SOER) 86-3 (ref. 3), a check valve inspection program has been implemented at Turkey Point. Until the recent (1992) adoption of external diagnostic equipment to determine valve condition, the inspections which were programmatically required on safety related check valves at Turkey Point under SOER 86-03 were performed primarily by internal visual inspection. At Turkey Point, no similar cross-seat defects have been identified during visual inspections which have been conducted since 1987. Over 100 valves within the SOER 86-03 program have been visually inspected to date. Of these, 6 other Aloyco check valves of varying sizes have been inspected and no similar problems noted. Most significantly, one of the corresponding Unit 4 RHR Pump discharge check valves, 4-753B, was previously inspected in 1989 and no signs of seat cracking were evident.

Based on these considerations, no generic operability concern is indicated for either Aloyco or other safety related check valves at Turkey Point.

References:

1. FPL Engineering Evaluation, JPN-PTN-SEMS-90-041, Rev. 5, "10 CFR 50.59 Safety Evaluation, Acceptability of As-Found Condition for RHR Check Valve 3-753A", dated August 4, 1993.
2. Letter, USNRC to J. H. Goldberg(FPL), concerning "Turkey Point Nuclear Power Station, Unit 3 - Review of Residual Heat Removal (RHR) Flaw Indications", dated June 17, 1994.
3. Significant Operating Experience Report 86-3, Check Valve Failures or Degradation.



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